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SUBJECT: BANGLADESH, A CLIMATE CHANGE FRONT LINE STATE

SUMMARY

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¶1. Already faced with numerous environmental challenges, Bangladesh is one of the countries most vulnerable to climate change. With an area the size of Wisconsin, Bangladesh supports a population of 150 million in a deltaic landscape at the confluence of the Ganges, Brahmaputra and Meghna River systems. South Asia's monsoon climate brings extreme periods of wet and dry, each of which presents a series of problems, including flooding, ground water contamination, siltation of rivers and salinization of coastal soils. Most Bangladeshis live at an altitude of less than ten meters above sea level, presenting an ominous scenario given climate change and the associated rising sea. Current climate trends, including temperature rise, sea level rise, expanding salinity, and increasingly erratic monsoons suggest the situation will get worse.

¶2. At the United Kingdom-Bangladesh Climate Change Conference in London last September, the Government of Bangladesh (GOB) unveiled a Bangladesh Climate Change Strategy and Action Plan (BCCSAP) to address several themes related to climate change, including food security, social protection and health, disaster management, infrastructure, research and knowledge management, carbon mitigation and capacity building. On a recent visit to Bangladesh, the State Department's Regional Environmental Officer for South Asia met a number of key figures concerned with climate change, including several directly involved in the BCCSAP. There is a consensus the GOB and donors should focus on community adaptation to climate change.

ENVIRONMENTAL OFFICER HIGHLIGHTS NEW EMPHASIS

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¶3. The Regional Environmental Officer, based at U.S. Embassy Kathmandu, recently visited Bangladesh and exchanged views with key Bangladeshi officials and institutions, including a member of the Intergovernmental Panel on Climate Change (IPCC), the Indo-Bangladesh Joint Rivers Commission, officials from the Ministry of Water Resources and the Ministry of Environment and Forests (MoEF), several engineers, climate scientists and NGO representatives. He highlighted the new U.S. administration's emphasis on climate change, illustrated by the appointment of Climate Change Envoy Todd Stern. Discussions also focused on trans-boundary water resources, disaster mitigation and awareness building.

OVERVIEW FROM CLIMATE CHANGE EXPERT

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¶4. Dr. Qazi K. Ahmad, a well-known economist, is a member of the IPCC, which won the 2007 Nobel Peace Prize. He is chairman of Bangladesh Unnayan Parishad (BUP), a development NGO, and has

written extensively on environmental and water resource issues in South Asia. He briefed the REO and EmbOff on the overall challenges facing Bangladesh, highlighting food and water security, both of which are directly related to climate change. He also emphasized the need to address climate change comprehensively, both among domestic institutions, and with neighboring countries. BUP advocates a community approach to flood management. Small amounts of money can make a big difference, and people must be involved in the adaptation process. He explained his perception that Bangladesh's climate was becoming more erratic. Bangladesh traditionally had six seasons based on weather patterns and crop cycles, but in recent decades, he claimed, the seasons had started to blur, as weather patterns became less predictable.

#### TRANSBOUNDARY WATER SHARING

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15. Of the 54 rivers flowing into Bangladesh from India, the two largest are the Ganges and Brahmaputra, known in Bangladesh as the Padma and Jamuna respectively. In India, just upstream from the Bangladesh border, the Farakka Barrage controls the flow of the Ganges River. A 1996 treaty between India and Bangladesh stipulated a formula for allocating water to each country based on the overall flow at Farakka, to be monitored by the Indo-Bangladesh Joint Rivers Commission. With increasing demands for irrigation in both countries, flow levels have decreased in recent years. In February of 2008 and 2009, flow levels were about ten percent below the forty-year average for February established between 1949 and 1988. The treaty does not address changes brought on by river use activities further upstream in India. The Brahmaputra River has not yet been altered by infrastructure, but talk of proposed irrigation projects in Tibet, where the river originates, raises concerns downstream.

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16. India has proposed major river-linking projects, where water would be transferred from one river to another to mitigate excessive or deficient flow levels. Some claim these projects will benefit Bangladesh by reducing seasonal variability in the river flow. However, annual flooding is part of the natural cycle vital to Bangladesh's soil fertility. While Bangladesh does not yet have sufficient data to establish with certainty a case against Indian river-linking plans, early indications from a study by the Institute of Water and Flood Management at the Bangladesh University for Engineering and Technology (BUET) suggest river linking upstream would be detrimental to Bangladesh by depriving it of these natural processes and altering its environment.

17. Southwestern Bangladesh has suffered from the reduced flow of the Ganges, caused in part by upstream irrigation and dam projects. Many rivers and streams, including the Gorai River, the largest estuary in the region, become stagnant and lifeless in the dry season. In the coastal areas, salt water from tidal flows increasingly intrudes on fresh groundwater, raising salinity levels in the soil and making it unsuitable for traditional crops. Suspended sediment in the Bay of Bengal at the mouths of the Ganges also washes inland with the tides, creating further siltation. To mitigate these effects, the Bangladesh Water Development Board (BWDB) has proposed a new barrage to be built on the Padma (Ganges) River to divert more water into the Gorai River. To address the siltation problem, the GOB has proposed a plan to open patches of coastal land, on a rotating basis, to river and tidal deposits, a plan it claims has won acceptance from local residents who understand the benefits of these natural processes. These are among a series of proposals by the Ministry of Water Resources under the BCCSAP.

#### FORECASTING CAPABILITIES

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18. Other water management proposals include projects to improve embankments and other flood control infrastructure, and to enhance flood forecasting capabilities. BWDB already has a sophisticated Flood Forecasting and Warning Center (FFWC), which provides daily online data, accessible to the public, on current and forecast river

levels at more than one hundred gauging stations around the country.

Proposed further enhancements include the development of more accurate digital elevation models to help predict the spatial extent of anticipated flooding. FFWC's approach to flood management increasingly emphasizes adaptation to natural processes rather than intervention, focusing attention on flood forecasting, erosion prediction, environmental monitoring and watershed management. FFWC is in the preliminary stage of developing models for future scenarios based on satellite data. It has no access to Indian data, which makes the task more difficult.

**¶9.** The SAARC Meteorological Research Center is concerned with more long-term climatic forecasts. Here, scientists from BUET and other South Asian institutions have created long-range temperature and precipitation forecasting models for the region. While the models predicted only a slight increase in temperature in Bangladesh over the next several decades, predictions for the Himalayan region showed a rapid increase of several degrees Celsius by 2050. Though highly uncertain, the models seem to corroborate the rapid depletion of glaciers and snow cover already evident in the Himalayas.

#### ADAPTATION AND AWARENESS

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**¶10.** Dr. Rezaur Rahman heads the Institute of Water and Flood Management at BUET. He announced that BUET, a highly respected institution and the leading domestic source of Bangladesh's scientific talent, would soon inaugurate a Climate Change Studies Cell. This unit would provide inter-disciplinary training on climate change for water development professionals, including project planners, agro-scientists, economists and water engineers. Dr. Rahman estimated Bangladesh had about 2,000 to 3,000 such professionals at the district and upazilla (county) level, and would benefit from further capacity building.

**¶11.** The Department of Environment, within the MoEF, established a Climate Change Cell in 2004 to promote inter-agency awareness and response to climate change. Through its Comprehensive Disaster Management Program the Cell develops training programs and publications for local level stakeholders, addressing the implications of climate change in a variety of areas, including agricultural adaptation, human health and disaster preparedness. The Cell has six adaptation projects underway, involving risk reduction assessments and climate change response action plans. The

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Cell collects information on best practices and has access to research data, placing it in a good position to advise communities.

#### USG MITIGATION AND ADAPTATION INITIATIVES

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**¶12.** USAID, long a supporter of rural electric cooperatives in Bangladesh, currently supports a renewable energy project training village women in the assembly and maintenance of solar energy systems. Twenty training centers have been established and fifteen more are planned, in an effort to reach up to 100,000 trainees by 2015. The GOB and USAID are also putting in place a portfolio of forest and wetland conservation projects, with a minimum value of \$25 million, by 2011. With these projects Bangladesh would be able to earn carbon credit, to be marketed to high carbon emitting countries to offset their excessive emissions, thereby enhancing the economic value of protected areas.

**¶13.** The USG also promotes climate change adaptation through disaster management, risk reduction and natural resource management projects. USAID has funded 245 multipurpose disaster shelters and 4000 small-scale mitigation structures, such as embankments and raised homesteads. Following Cyclone Sidr in 2007, USAID initiated a \$75 million reconstruction, recovery and livelihoods generation program in the affected area. Future cyclones, likely to increase in frequency due to climate change, will require similar efforts.

#### COMMENT

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¶14. Given the growing emphasis on climate change, both in the U.S. and globally, Bangladesh is likely to attract more attention as one of the front line states. The vast number of people potentially affected by climate change in Bangladesh has major implications for food security, migration, environmental refugees and urbanization. Awareness of the problem is certainly growing, and Bangladesh's institutional response structures are starting to take shape, although considerable bureaucratic streamlining is still needed. Internationally, a major obstacle is the fragmented approach to climate change by different nations sharing the same environment. Increased regional cooperation will be vital, not just within the subcontinent but with China and other Asian countries as well.

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